

**Project: Head Start Enrollment** The table shows the enrollment  $E$  (in thousands) in Head Start programs in the United States from 1988 through 2009. (Source: U.S. Department of Health and Human Services)

Year	Enrollment, $E$
1988	448.5
1989	451.0
1990	540.9
1991	583.5
1992	621.1
1993	713.9
1994	740.5
1995	750.7
1996	752.1
1997	793.8
1998	822.3
1999	826.0
2000	857.7
2001	905.2
2002	912.3
2003	909.6
2004	905.9
2005	907.0
2006	909.2
2007	908.4
2008	907.0
2009	904.2

- Use a graphing utility to plot the data. Let  $t$  represent the year, with  $t = 8$  corresponding to 1988.
- Use the *regression* feature of the graphing utility to find a quadratic model for the data.
- Use the graphing utility to graph the model from part (b) and the original data in the same viewing window. How well does the model fit the data? Explain your reasoning.
- Consider the equation  $-1.584t^2 + 80.54t - 107.9 = 880$ . Use the discriminant to determine the number of solutions of the equation.
- Solve the equation from part (d) algebraically. Interpret the solution(s) in the context of the problem.
- Does your answer to part (e) seem reasonable? Explain.